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Sixty Cases of Disabling Farm Accidents

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THOMAS T. STOUT and BRUCE I. DARBEE

INTRODUCTION

Agriculture is and long has been among the more dangerous occupational pursuits. The National Safety Council recorded a national average accident death rate in 1970 of 18 persons killed per 100,000 workers. The comparable rate for agriculture was 67 per 100,000, causing agriculture to rank third highest in eight industrial classifications reported by the Council.[1] The Council cites evidence of disabling injuries in agriculture occurring at the rate of approximately 16.1 injuries per million man hours (assuming 10-hour work days) which, compared to a national average of 8.9, ranks agriculture eighth highest among 42 industrial classifications.[2]

A recent Ohio study determined that in 1967 more than 22,700 Ohio farm people required medical care for injuries incurred in farm accidents.[3] Similar accident records for Ohio farm people have been reported in earlier studies.[4] According to these studies, there were 46 accidents per 1,000 farm people in 1962 and 42 accidents per 1,000 in 1967. These studies estimate that perhaps 45 percent of these accidents could be considered severe, that 12 percent of the accident victims required hospitalization, and that 3 percent of the accidents resulted in permanent injury or death.

This study focuses on those farm people who received permanent injuries from farm accidents. The objectives were:

- To identify basic family characteristics, job characteristics, and other descriptive data concerning people disabled by farm accidents
- To determine types of injuries sustained, conditions surrounding the accident, and accident causes
- To assess individual and family resources brought to bear in meeting the burden imposed by the accident and the injury
- To determine how accident costs were met
- To obtain assessments and recommendations of study participants concerning factors affecting accident prevention and successful rehabilitation from disabling injuries.

THE SAMPLE

The information in this bulletin was obtained from personal interviews with 60 injured farm people. Their names were obtained from two sources. These were the Ohio Cooperative Extension Service (OCES) and the Ohio Rehabilitation Services Commission (ORSC). Neither of these agencies maintains records which are helpful in locating disabled farm people; the ORSC does not maintain patient records by occupational status, for example. Hence it was necessary to depend upon the contacts and recollections of county agricultural agents of OCES and area supervisors in regional vocational rehabilitation offices of ORSC. County agricultural agents were contacted in the glaciated counties nearest Columbus; the Columbus office of the ORSC suggested that vocational rehabilitation counselors be contacted in St. Clairsville, Dayton, Lima, and Cincinnati. All of these sources responded voluntarily to requests for information and 91 names were suggested. Thirty-one names were deleted from the list, for reasons summarized in Table 1. Interview schedules were completed with 60 people in 28 counties (Fig. 1).

TABLE 1.—Disposition of 91 Suggested Participants, Analysis of Farm People Permanently Injured by Farm Accidents, Ohio Study, 1971-72.

Disposition of Names Suggested		Rejected	Accepted
Total contacts suggested			91
Contacts unable to locate or schedule*		10	
Contacts rejected as inapplicable		16	
Non-farm accidents	6†		
Non-accident handicaps	3‡		
Injuries too vague	3**		
Injuries in infancy	2††		
Injuries too recent	2‡‡		
Contacts refusing to cooperate		5	
Total contacts rejected		31	
Total questionnaires completed			60

*Contacts no longer at given address, contacts untraceable, contacts unavailable at time of survey.

†Some contacts proved to be non-farmers. Several injuries were coal mine accidents, for example. Farmers were included even if accidents occurred off the farm, i.e., auto or hunting accidents.

‡Handicaps with origins in disease.

**Nature of injury not clearly identifiable.

††Injuries in infancy rejected for lack of ability to make comparative judgments about the adjustment process.

‡‡Injuries too recent to have permitted adjustment to occur.

Source: Survey data.

[1]Anonymous. 1971. Accident Facts. National Safety Council, 425 N. Michigan Avenue, Chicago.

[2]Ibid. Comparisons based on injuries causing ½ day or more of lost time. Agricultural injury rates based on a New York study cited on page 86. Industry average and industrial classifications on page 26.

[3]Phillips, G. H. and W. E. Stuckey. 1968. Accidents to Farm and Rural Non-farm People in Ohio. Ohio Agri. Res. and Dev. Center, Res. Bull. 1016.

[4]Baker, R. H. and W. E. Stuckey. 1958. Let's Curb Farm Fatalities. Ohio Agri. Ext. Serv., Bull 365. Also, Bible, B. L. and W. E. Stuckey. 1963. Accidents to Farm People in Ohio: 22,608th Emergency Call. Ohio Agri. Ext. Serv., Bull 439.

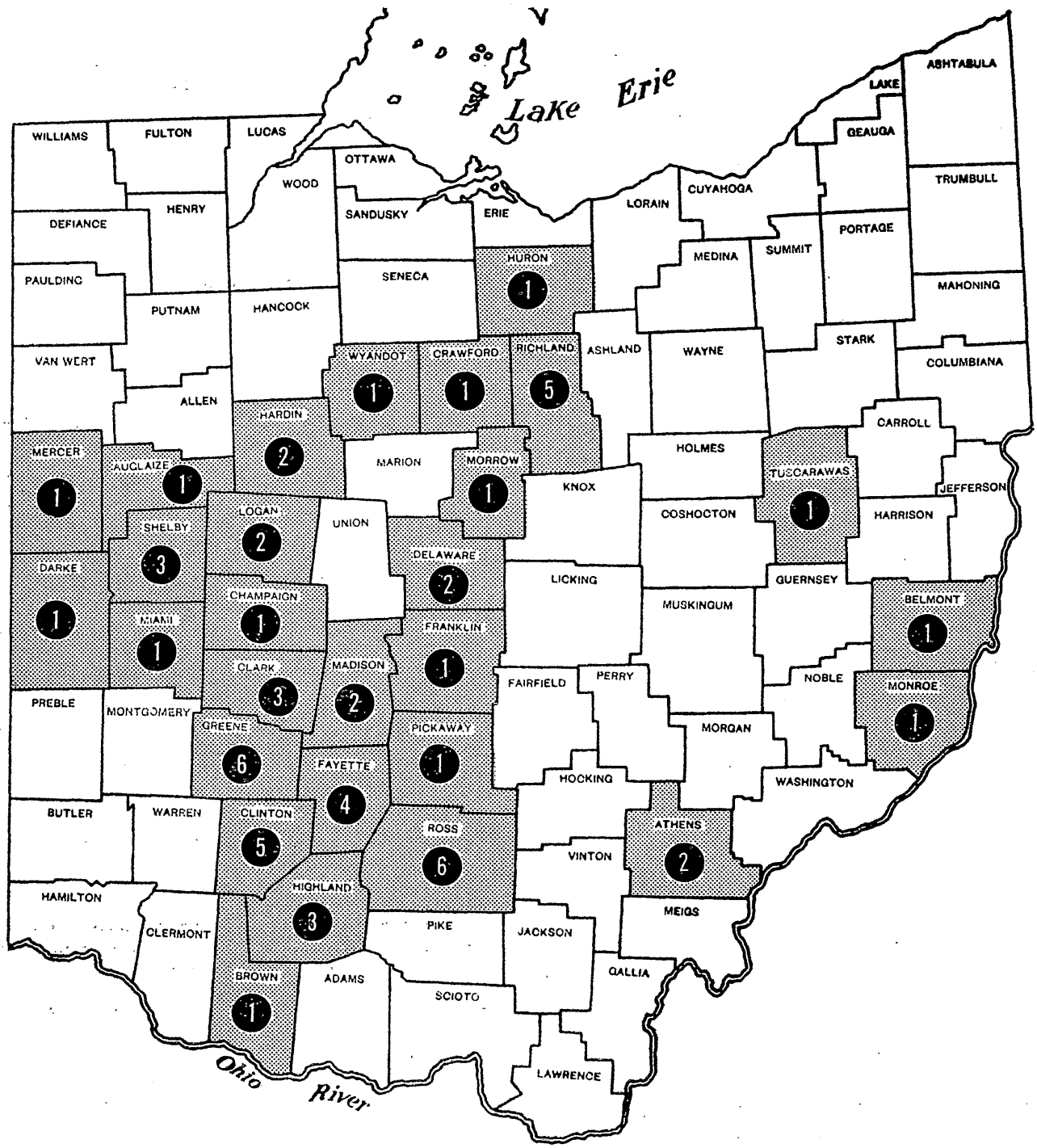

FIG. 1.—Twenty-eight Ohio counties in which 60 farm people handicapped by farm accidents were interviewed, 1971-72.

TABLE 2.—Age and Household Status of 60 Study Participants Permanently Injured by Farm Accidents, Ohio Study, 1971-72.

Age	At Time of Injury				At Time of Interview			
	Household Dependent	Household Head	Single	Total	Household Dependent	Household Head	Single	Total
Under 10	4	0	0	4	0	0	0	0
10-19	2	1	1	4	1	0	0	1
20-29	2	6	7	15	2	4	1	7
30-39	0	13	0	13	0	8	2	10
40-49	0	12	0	12	1*	10	0	11
50-59	0	9	0	9	0	22	0	22
60-69	1	2	0	3	1	7	0	8
70 and over	0	0	0	0	0	1	0	1
Total	9	43	8	60	5	52	3	60

*Indicates dependent status due to injury.
Source: Survey data.

The Interview Process

Five interviewers went to the field in December 1971 and January 1972. Interviewers were instructed in: 1) the purpose and objectives of the study, 2) the organization of the schedule, 3) uniform interpretation of schedule questions, and 4) interview procedures and interviewer conduct. Then all interviewers were taken to the field as a group to meet, one at a time, three study participants, each of whom had agreed to be interviewed in group session in order that interviewers might have the opportunity to observe firsthand what they were about to undertake on their own. Further minor schedule revisions ensued, and field work began.

Characteristics of the Sample

Study participants ranged in age from 18 to 75 at the time they were interviewed between December 1971 and January 1972. They ranged in age from 3 to 68 when they were injured, from 1 to 43 years ago. On the average, they were 35.4 years old when they were injured 11.2 years ago. Forty-three of these participants were male heads of households when they were injured, nine were dependent family members, and eight were single, earning independent livings. Eight of the participants were under 20 when they were injured, and four of them were under 10 (Table 2).

About 70 percent of those injured were adults engaged in full-time farming operations, as full or part-owners or as tenants, but not as hired hands. A small number were part-time farmers who had second jobs off the farm, usually in nearby factories.

By the time study participants were interviewed, substantial changes had occurred in occupational status. Full-time farming had declined, part-time farming had doubled in importance, families were older and the number of dependents had declined, and (reflecting the continued out-migration of farm people) 20 percent of the sample had moved into non-farm employment (Table 3).

The average family income reported by study participants was $9,075 in 1970. The average 1970 family income reported by participants engaged in full or part-time farming was $8,395. In more than one-third of the cases, other family members contributed additional household income, averaging $5,174

TABLE 3.—Employment Status of 60 Farmers Permanently Injured in Farm Accidents, Ohio Study, 1971-72.*

Nature of Employment	At Time of Injury	At Time of Interview
Full-time Farming		
All owned land	19	14
Owned and rented land	17	16
All rented land	6	1
Part-time Farming		
All owned land	2	4
Owned and rented land	1	3
All rented land	2	3
Farm hired-hand; Employee	4†	2
Non-farm employment	0	12
Dependent or retired	9	5
Total	60	60

*It is important to note that changes in status recorded in this table were not necessarily induced by injury. When asked to compare their present and previous status, 36 farmers reported it was unchanged. Only six farmers reported that their injury was clearly a factor in their decision to change their status. Of these six, it was apparent that the injury-induced change was disadvantageous in only two cases. Three of the six whose injury was a factor in their change regarded the change as clearly advantageous to them (Table 18).

†Includes one son living at home and working away from farm, but injured while helping parent at home.

Source: Survey data.

TABLE 4.—Taxable Annual Income of Farm Families in Which a Member Was Permanently Injured in a Farm Accident, Ohio Study, 1971-72.

Income Level	At Time of Injury*		At Time of Interview	
	Study Participants Contributing Income	Other Family Members Contributing Income	Study Participants Contributing Income	Other Family Members Contributing Income†
Less than $1,500	6	3	2	3
$1,501-2,500	3	4	2	5
$2,501-3,500	8	1	5	4
$3,501-4,500	8	1	3	2
$4,501-5,500	8	3	7	2
$5,501-6,500	3	0	4	1
$6,501-7,500	2	1	3	1
$7,501-8,500	5	0	10	2
$8,501-10,000	2	0	6	1
$10,001-12,000	1	1	1	1
$12,001-14,000	2	0	3	1
$14,001-16,000	2	1	2	0
$16,001-20,000	2	1	0	0
More than $20,000	0	0	3	0
Unknown or No Answer‡	8	5	9	0
Total	60	21	60	23
Average Income	$6293	$4424	$9075	$5174

*Past and present not comparable because of inflation. Since the evidence is in current dollars for an historic period, income levels are understated compared to 1971 dollars.

†Most family members contributing to family income were parents of injured dependents and wives of injured household heads. Wives contributed to family income in many ways, ranging from semi-skilled labor to professional qualifications; for example, as registered and practical nurses, cooks, librarians, bookkeepers, bus drivers, teachers, clerks, secretaries, factory workers, and farmers.

‡Some respondents reported gross farm sales, some reported taxable earnings disproportionately low, some preferred not to answer.

Source: Survey data.

TABLE 5.—Nature of Injury and Source of Injury to 60 Farm People Permanently Injured in Farm Accidents, Ohio Study, 1971-72.*

Nature of Injury	Machinery-in-Motion Source†				Non-Machine Source	Total
	Cornpicker	Field Chopper	Other Machinery	Total		
Amputations						
BTE Right‡						
Fingers	5	1	3	9	0	9
Partial hand	4	0	0	4	0	4
Hand at wrist	3	2	2	7	0	7
Above the wrist	5	0	0	5	0	5
BTE Left‡						
Fingers	4	0	2	6	0	6
Partial hand	2	0	0	2	1	3
Hand at wrist	1	0	0	1	0	1
Above the wrist	5	0	1	6	0	6
BTE Bilateral	3	0	0	3	0	3
ATE**	1	4	1	6	0	6
BTK††	1	0	5	6	1	7
ATK‡‡	1	0	1	2	0	2
Vision—one eye	0	0	2	2	1	3
Skeletal damage	0	0	0	0	3	3
Other	0	0	0	0	1	1
Total	29	7	17	53***	7	60***

*Note the table identifies sources of injuries without identifying these sources as causes of injuries incurred.

†All machinery accidents occurred when machinery was running except for one of two vision injuries below.

‡BTE—Below the elbow. Figures include bilaterals.

**ATE—Above the elbow. ††BTK—Below the knee. ‡‡ATK—Above the knee.

***Column adds up to total injuries numbering six greater than column total. This is due to the double counting of injuries for three bilateral amputees.

Source: Survey data.

TABLE 6.—Year in Which Injury Was Incurred by Study Participants Permanently Injured by Farm Accidents, Ohio Study, 1971-72.

Year of Injury	Machinery-in-Motion Sources				Non-Machine Sources	Total
	Cornpicker	Field Chopper	Other Machines	Total		
Before 1940	0	1	0	1	1	2
1940-1949	1	0	2	3	1	4
1950-1954	7	0	2	9	0	9
1955-1959	6	1	0	7	0	7
1960-1964	6	1	3	10	2	12
1965-1970	9	4	10	23	3	26
Total	29	7	17	53	7	60

Source: Survey data.

(Table 4). Average family income reported by participants at the time of their injury was approximately $6,300, with an additional $4,400 provided by other family members in one-third of the households. However, direct comparison between previous and present income was not possible due to the wide range of years over which the injury-year incomes had been earned.

THE ACCIDENTS

Nature and Source of Injuries

Types of injuries causing permanent impairment, and the sources of these injuries, are summarized in Table 5. Machinery was related to approximately 90 percent of these accidents and, almost always, the machinery was turned on and running. Accidents not involving machines accounted for a small share of injuries causing permanent impairment.[5]

Moving machinery was closely associated with injuries which resulted in amputations. Cornpickers were involved in almost one-half of all the accidents, and were the primary source of losses to upper limbs. A wide variety of farm machinery was involved in other accidents. These included tractors, mowers, haybalers, buzz saws, elevators, silo fillers, field choppers, and others. Among these, field choppers (forage harvesters) were the only other common source of accidents.

A pattern of injury-type/injury-source relationships was apparent. 1) Cornpickers accounted for the great majority of upper limb amputations below the elbow (BTE), and were associated with very few injuries of any other kind. 2) More often than not, field choppers were associated with amputations above the elbow (ATE); otherwise, they were associated with BTE amputations and were not associated with lower limb amputations. 3) Most of the lower limb amputations, either above the knee (ATK) or below the knee (BTK), were the result of an encounter with a piece of moving machinery. Tractor power take-off shafts (PTO's) were one source of lower limb injuries; tractor mowers were another source.

From the limited evidence the study provides concerning non-machine accidents, there seems to be a clear distinction between machine and non-machine injuries. Loss of vision is not clearly associated with moving machinery accidents. Skeletal damage usually is associated with slipping or falling, or perhaps an encounter with an animal.[6]

Year in Which Injuries Occurred

Previous research indicates that the overall Ohio farm accident rate apparently has been declining.[7] But according to the results of this analysis, the incidence of accidents producing permanent injuries is apparently rising. The 60 accidents involved in this study occurred over a 43-year period. But more than two-thirds of them occurred in the final one-third of that period, and nearly one-half of them occurred in the recent 5-year period 1965-1970 (Table 6).

There is room for conjecture about the reliability of the above information. For example, some people injured in earlier years no longer survive to be interviewed and, since the names of study participants were suggested from memory, one could expect that the most recent accidents would have been most readily recalled. But such skeptical considerations might divert attention from another possibility with greater implications for accident prevention in the future.

[5]The sample is biased in this respect, however. When study participants were selected, some suggested names were eliminated because of vague or suspect injuries, such as back impairments. These seem to be associated with non-machine accidents. The sample was biased in favor of clear and identifiable injuries, such as amputations, and amputations usually are related to machinery accidents. Moreover, the sample area (Fig. 1) focused the survey more toward the intensively agricultural, Corn Belt portions of the state, and perhaps caused a disproportionately large share of cornpicker accidents to appear in the sample.

[6]These observations appear to be confirmed by previous accident research. See, for example, Phillips and Stuckey, op cit.

[7]See Phillips and Stuckey, op cit., and Bible and Stuckey, op cit.

TABLE 7.—Sources of Permanent Injuries Incurred by Farm People from Farm Accidents, by Age Groups, Ohio Study, 1971-72.

Age When Injured	Machinery-in-Motion Sources				Non-Machine Sources	Total
	Cornpicker	Field Chopper	Other Machines	Total		
Less than 10	1	0	2	3	1	4
10-14	1	1	0	2	0	2
15-19	1	0	0	1	1	2
20-24	5	1	1	7	0	7
25-29	4	1	3	8	0	8
30-34	2	0	0	2	0	2
35-39	8	1	2	11	0	11
40-44	1	0	3	4	2	6
45-49	4	1	1	6	0	6
50-54	2	1	2	5	2	7
55-59	0	1	1	2	0	2
60-64	0	0	1	1	0	1
65 and more	0	0	1	1	1	2
Total	29	7	17	53	7	60

Source: Survey data.

TABLE 8.—Years of Experience Among Farm People Permanently Injured in Farm Machinery Accidents, Ohio Study, 1971-72.

Years of Experience	Cornpicker	Field Chopper	Other Machines	Total
In Farming				
Less than 5	2	1	2	5
5-9	1	2	0	3
10-14	7	1	3	11
15-19	4	0	2	6
20-24	6	0	1	7
25 or more	8	3	9	20
No answer	1	0	0	1
Total	29	7	17	53
Average Years*	18.4	22.4	20.7	19.7
With Accident Source†				
Less than 1	1	2	3	6
1-3	9	1	3	13
4-6	6	2	0	8
7-9	5	0	1	6
10 or more	3	2	8	13
No answer	5	0	2	7
Total	29	7	17	53
Average Years*	5.0	7.0	9.7	6.7

*Arithmetic mean of raw data.
†Refers to experience with the specific machine involved in the accident and not to total experience with that general category of machinery.
Source: Survey data.

TABLE 9.—Causal Considerations Associated with Farm Accidents Resulting in Permanent Injuries to Farm People, Ohio Study, 1971-72.

Causal Consideration	Machinery Sources					
	Cornpicker	Field Chopper	Other Machinery	Total	Non-Machine Sources	Total
Failure to Observe Standard Safety Practices						
Conscious Risk Acceptance*	27	6	5	38	0	38
Other†	0	0	5	5	0	5
Carelessness, Negligence, Fatigue	5	0	0	5	0	5
Hurrying to Meet Deadlines‡						
Real Deadlines	6	3	1	10	3	13
Self-imposed Deadlines	7	3	2	12	0	12
Thinking About Something Else						
Planning Other Jobs**	6	0	1	7	0	7
Worrying-Distress††	3	2	1	6	0	6
Daydreaming	1	1	3	5	1	6
Other	2	2	0	4	0	4
Mechanical Failure	0	0	1	1	0	1
Other Considerations‡‡	2	0	4	6	0	6
No Answer	0	0	0	0	3	3
Total	59	17	23	99	7	106
Considerations per Accident	2.0	2.4	1.4	1.9	1.0	1.8

*The study participant consciously confronted an obvious risk situation (almost always a case of attempting to unclog a piece of moving machinery) and decided to take a familiar risk again.

†Includes inadequate shielding of moving parts, usually PTO's; failure to yield right of way; failure to wear safety glasses, etc.

‡"Real" deadlines are those imposed by uncontrollable circumstances; for example, the need to finish a weather-delayed cornpicking job in order to get to the job of sowing wheat. "Self-imposed" deadlines include anxiety to get home to dinner, to make one more round before dark, and similar volitional commitments seen in retrospect by the study participant to have been unnecessary.

**Usually cornpickers planning the wheat sowing job.

††Money, family deaths, employer-employee relations, etc.

‡‡Slipped on snow or ice, wearing new glasses, child disobeyed parents, etc.

Source: Survey data.

Farm consolidation continued at a rapid rate throughout this period, operating margins narrowed, farm units became more intensively employed, each operator increased his use of machinery, and each unit of labor became associated with greater magnitudes of machinery. All of these considerations suggest that throughout the period in which the 60 accidents occurred, factors contributing to increased stress in farming activities were also occurring. Stress emerges as a possibility for explaining accident causes.

Age and Experience When Injury Occurred

More than one-half of all accidents occurred in the age span of 25 to 49 years. Sixty percent of all machinery accidents occurred in the same age span, and two-thirds of all cornpicker accidents (Table 7). It is difficult to argue that the accidents were a result of inexperience. Study participants had an average of nearly 20 years of experience in farming by the time of their injury, and that average includes even the small children in the sample. Moreover, those who were injured by machinery (including the children) had an average of nearly 7 years of experience with the machine which injured them (Table 8). This does not mean experience with that general category of machinery, but experience with the specific machine involved in the accident.

Season, Weather, and Hour Conditions

It is not unreasonable to say that the typical accident occurred with a piece of harvesting machinery in the afternoon of a pleasant day which would offer good harvesting conditions in summer or autumn.

Of all accidents of all kinds, 86 percent occurred between July and December, and 67 percent occurred between noon and 6:00 p.m. Of all machinery accidents, 89 percent occurred between July and December, 67 percent occurred between noon and 6:00 p.m. and 72 percent occurred on a clear and sunny day.

Accident Causes

Study participants were asked to respond to specific questions relating to possible accident causes, and to volunteer any additional comments which might occur to them. Responses were tabulated into major categories. Three categories seemed to be particularly enlightening: 1) conscious risk acceptance, 2) hurry to meet real or imagined deadlines, and 3) mental distraction (Table 9).

TABLE 10.—Approximate Medical Costs Paid by 26 Farm People Permanently Injured in Farm Accidents, 1965-1970.*

Type of Injury	Medical Costs Incurred Within 6 Months of Injury			Medical Costs Incurred More Than 6 Months After Injury†		
	No. of Cases	Average Cost	Range in Cost	No. Reporting	Average Cost†	Range in Cost
Amputations:						
BTE‡						
Fingers	6	$1500	$ 150-4000	0	$ 0	$ 0
Others**	6	2000	800-3700	4	500	420- 600
ATE‡	4	2500	900-4000	4	700	25-2100
BTK-ATK‡	6	4500	1500-8700	2	675	††
Vision (one eye)	3	1350	1000-1500	2	1000	††
Other††	1	2300	—	1	70	—
Total	26	$2350	$ 150-8700	13	$ 625	$ 25-2100

*Includes medical costs of all kinds: physician, hospital, prostheses, etc. Medical cost considerations in this table are limited to 26 1965-1970 cases because only current medical skills and current dollar values provide useful information.

†Note that subsequent cost averages and ranges refer only to those people who actually incurred subsequent costs. A substantial share of subsequent costs can be accounted for by the purchase or replacement of prostheses.

‡For definitions, see footnotes to Table 5.

**Includes partial hand, hands at wrist, hands above wrist.

††Type or cost of injury not reported to protect identity of individual respondents.

Source: Survey data.

TABLE 11.—Approximate Days Lost Cost Incurred by 60 Farm People Permanently Injured in Farm Accidents, Ohio Study, 1971-1972.

Type of Injury	Days Lost Within 6 Months of Injury			Days Lost More Than 6 Months After Injury*		
	No. of Cases	Average Days Lost	Range in Days Lost	No. Reporting	Average Days Lost*	Range in Days Lost
Amputations:						
Fingers	13	60	3-180	1	180	—
Partial Hand	5	65	21-180	1	30	—
Hand at Wrist	7	75	0-180	0	0	0
Hand Above Wrist	10	75	14-180	1	180	—
BTE Bilateral†	3	125	77-180	1	360	—
ATE‡	6	95	18-180	3	135	22-200
BTK-ATK‡	9	150	60-180	5	200	30-550
Skeletel Damage	3	150	120-180	1	—	permanent
Vision - one eye	3	82	7-180	2	—	15-permanent
Other	1	80	80	0	—	—
Total	60	90	0-180	15	165*	15-permanent

*Days lost after first 6 months are averaged only for those people who actually lost days from work after first 6 months. Averages exclude two individuals with permanent loss.

†Bilateral amputees are not counted separately elsewhere in table.

‡For definitions, see footnotes to Table 5.

Source: Survey data.

In the matter of conscious risk acceptance, almost always the situation was one in which the farmer confronted an obvious risk situation, almost always a case of attempting to unclog a choked-up piece of harvest machinery while it was running, and deciding to take a familiar risk again. Study participants acknowledged other risk factors, such as the wisdom of protective shields over moving parts, like PTO's, or the need to wear safety glasses. But these responses seemed ritualized and did not carry much of an air of conviction. None of the responses recorded in Table 9 conveyed the same candid air of confession as the responses about taking the obvious risk.

Hurrying to meet deadlines, however, was another possibility readily conceded. Whether these deadlines had been real or self-imposed caused some introspection. Those who conceded that the deadlines might not have been real ones often responded with a note of surprise, as if they hadn't thought of that before. They were by nature, it seemed, shoulder-to-the-wheel type people, accustomed to confronting a situation and taking charge, accustomed to taking risks and meeting deadlines.

The accident victims admitted that they worried sometimes or planned or daydreamed or were otherwise distracted from what they were doing (Table 9). They picked corn and thought about sowing wheat. They worried about hired hands or employers, or money or domestic troubles.

But they did not say that accidents were caused by machines or machine failures or other things beyond the control of people.

Summing it up, it seems not unreasonable to suppose that a problem with the average person injured was not that he was inexperienced in what he was doing, but that he was overexperienced. He was sure he knew what he was doing, and he was in a hurry. It seems to be a function of much farm machinery to clog up when it is running and to resist unclogging when it is stopped. So the business of unclogging moving machinery was a familiar necessity to these people. They would say "Everybody does it," or "You can't clean it when it's stopped," or "I was down off that tractor every 5 minutes all day long."

So it seemed that when the farmer climbed down off the tractor he was a man in a hurry, with other things on his mind, stressed maybe and a little tired perhaps, but he was so experienced that he was a professional in the thing he was about to do.

ACCIDENT COSTS

Three types of accident costs were recorded. These were: 1) medical costs, 2) days lost from employment, and 3) estimated annual income losses. Inquiries about each of these were made in terms of costs incurred in the first 6 months after the injury, and subsequent costs incurred after those first 6 months.

The responses were most specific about the medical costs. These were actual cash outlays and were most clearly remembered, even though frequently compensated by insurance. The dollar value of days lost from work is less clear to a self-employed farmer than to a factory wage-earner. Moreover, the necessary labor to replace that cost often comes from family or neighborhood sources which are not compensated by wages. Finally, an estimate of annual income lost due to an injury either within or after the first 6 months is very difficult to estimate.

Medical Costs of Injuries

For any given type of injury, a wide range surrounds the average medical costs incurred. This range in costs reflects variations in the complexity of cases which might appear to the unpracticed eye to have much in common.[8]

Table 10 includes only 26 cases of recent injuries (since 1965) which provide a more accurate view of recent medical costs than would a sample of 60 injuries incurred over a period of more than 40 years. Costs of injuries in 1965-1970 averaged $2,350. In about half of the total cases, all of these costs were incurred in the first 6 months after the injury. The other half of the cases incurred some additional costs after the first 6 months; most of these costs were associated with the replacement of prostheses (Table 10).

Days Lost from Work

In the judgment of those who had been injured, that $2,350 injury also cost about 90 days lost from work in the first 6 months (180 days) after the accident (Table 11). There was a wide variation around that figure. Almost any kind of an accident could cost the whole 6 months. But most of the time (75 percent) there were no lost days after the first 6 months. Even among those who did lose some time beyond 6 months, most were back at work within the year. Very few did not return to work.

Some respondents reported that the loss of productive time was permanent. Whether this loss was physiological or psychological was not determined, but the answer would not change the fact that the loss was permanent in the judgment of the injured man.

Income Losses

The value of income lost in the first 6 months after an injury was judged by study participants to

[8]But one is left to speculate about other possibilities, on seeing a range in costs of nearly $4,000 for finger amputations, none of which involved any other part of the hand (Table 15).

TABLE 12.—Approximate Income Loss Incurred by 26 Farm People Permanently Injured in Farm Accidents, Ohio Study, 1965-1970.

Type of Injury	Estimated Income Loss First 6 Months After Injury			Estimated Annual Rate of Income Loss After First 6 Months†		
	No. of Cases	Average Loss	Range in Loss	No. of Cases	Average Loss	Range in Loss
Amputations:						
BTE‡						
Fingers	6	$ 600	$0-3600	0	$ 0	$ 0
Other	6	1500	0-3600	3	3000	2500-3600
ATE‡	4	500	0-2000	1	3000	—
BTK-ATK‡	6	DK**	0-DK**	0	0	0
Vision-one eye	3	1750	0-3000	1	Total	—
Other	1	0	—	0	0	0
Total	26	$ 675	$0-3600	5	$3000††	$2500-Total

*Only 1965-1970 cases are examined but only recent dollar values provide useful information about the magnitude of income loss.
†Includes only those people actually reporting an income loss.
‡For definitions, see footnotes to Table 5.
**Don't know.
††Average excludes one case reporting total income loss.
Source: Survey data.

average about $675. The matter was so conjectural that it was frequently dismissed with the sort of shrug which is reserved for idle speculation. In some cases there were reasons for specific responses. Maybe a custom cornpicking job to be paid in cash was lost. Maybe the cost of some other thing not done or something gone wrong was given a monetary value. Five farmers reported that they incurred subsequent income losses after the 6 months immediately following their injury (Table 12).

TABLE 13.—Percentage Distribution of Means by Which Injury Costs Were Met by Farm People Permanently Injured in Farm Accidents, 1971-72.*

Method of Covering Accident Cost	Accident Costs to be Covered	
	Medical†	Days Lost
Own Insurance	38.7 %	2.0 %
Employer's Insurance‡	8.3	2.9
Family Savings	28.8	1.8
State Aid**	18.6	1.9
Loan	0.0	0.0
Civic Organization	0.1	0.0
Church Groups	0.5	0.0
Family Members	0.6	42.2
Friends and Neighbors	0.5	25.0
Hired Hands	0.0	22.3
Other††	3.9	1.9
Total	100.0 %	100.0 %
Number of Respondents	60	52

*Percentage distribution reflects how the average respondent's costs were covered, without regard to how large or small individual costs were.
†Medical bills include "rehabilitation" costs reported by some respondents.
‡Employers include parents.
**Most state aid was to pay part or all of the cost of prostheses. Four cases of financial aid and one case of vocational training are included here, however.
††Includes current income, insurance from other sources, lawsuits, etc.
Source: Survey data.

Paying for Accident Costs

The percentage distribution of resources used in paying the medical and days-lost costs of injuries is summarized in Table 13. The costs were covered by the family and the surrounding rural social fabric. Loans were never used (or never acknowledged). Civic organizations were not involved. Neither were church groups, at least officially. Lawsuits and such things were practically unheard of, and even the insurance of employers would have been unimportant had it not been that employers were often the parents of dependent children who were hurt.

For the most part, the means employed to meet the challenge reflected a familiar rural pattern. The family paid its own bills, and friends, neighbors, and hired hands helped take care of the work on the farm.

State aid was the only important outside source of assistance. It most commonly came in the form of payment for, or contribution to the payment for, prosethetic devices, and perhaps a modest amount of training in their use. In some instances more substantial aid was available to and accepted by study participants. This additional aid usually took the form of vocational training or of subsidizing the cost of further education. As the following section shows, however, programs of formal rehabilitation did not figure significantly in the typical rural recovery story.

TABLE 14.—Percentage Distribution of Responses Concerning Factors Affecting the Recovery Experience of Farm People Permanently Injured in Farm Accidents, Ohio Study, 1971-72.

Factors Considered	No. Responding	Importance of Factors Considered				
		Very Helpful	Somewhat Helpful	Not Important	Slight Handicap	Severe Handicap
Your Agricultural Background	57	54.4 %	31.6 %	14.0 %	0.0 %	0.0 %
Your Rural Location	57	40.4	31.6	28.0	0.0	0.0
Your Financial Resources	55	23.6	12.7	52.8	9.1	1.8
Your Educational Resources	56	16.1	17.9	58.9	7.1	0.0
Rehab. Training or Assistance	13*	30.8	46.1	15.4	7.7	0.0
Church and Civic Groups	56	16.1	28.6	55.3	0.0	0.0
Neighborhood Reactions	55	40.1	23.6	34.5	1.8	0.0
Family Reactions	60	71.7	20.0	8.3	0.0	0.0
Personal Attitudes	57	59.7	22.8	7.0	10.5	0.0
Self-confidence	55	60.9	29.1	3.6	5.5	1.8
Other	4	100.0	0.0	0.0	0.0	0.0

*More than 13 participants responded to this question. Responses here are confined to those who indicated they received some sort of formal assistance or training.
Source: Survey data.

RECOVERY FROM INJURIES

Factors Affecting the Recovery Process

Formal rehabilitation training programs were the principal source of outside influence affecting the overall rehabilitation experience. However, these were limited. They were acknowledged as a recovery factor by only 13 study participants, only one of whom had received vocational training (Table 14). Typically, rehabilitation programs were restricted to brief training in the use of prostheses.[9]

Most respondents were satisfied with their own recovery experience and when asked about important factors affecting their recovery, focused on things which aided rather than hindered the recovery process. They thought their own personal attitudes, the reactions of family members, the advantages of an agricultural background, and their own self-confidence were the factors most critical to a successful recovery. Overall, they had little to say about factors hindering recovery, but did warn that poor personal attitudes, lack of confidence, and inadequate financial and educational resources would make recovery more difficult (Table 14).[10]

[9]It should be noted that formal rehabilitation training programs were not appropriate for many of the study participants, and that rehabilitation training was offered to some study participants who declined, feeling that they did not want or need it.

[10]Educational and financial resources might have emerged as more severe handicaps if more of these people had displayed much inclination to shift to non-farm employment because of their handicap. Most of them, however, returned by preference to their former pursuits in farming and never tested their worth in the non-farm job market.

TABLE 15.—Daily Living Skills: Reported Rate at Which Farm People Recovered Daily Living Skills After Receiving a Permanent Injury in a Farm Accident, Ohio Study, 1971-72.

Type of Injury	No. Responding	Percent of Normal Living Skills Recovered Within					
		First 3 months	4-6 months	7 months to 1 year	1-3 years	Still Continuing	Total of Possible 100 %
Amputations							
Fingers	13	75.8	16.5	4.6	1.3	0.0	98.2
Partial Hand	5	58.7	16.3	8.7	6.3	0.0	90.0
Hand at Wrist	7	73.5	8.6	12.1	4.3	0.6	99.1
Hand Above Wrist	10	65.0	11.5	10.5	7.0	1.0	95.0
BTE Bilateral	3	36.7	31.7	6.7	13.3	3.3	91.7
ATE	6	35.0	49.2	12.5	0.0	0.0	96.7
BTK-ATK	9	26.1	43.3	10.6	15.6	3.3	98.9
Skeletal Damage	3	66.7	3.3	3.3	0.0	—26.6†	46.7
Vision—one eye	3	48.4	43.3	8.3	0.0	0.0	100.0
Other	1	100.0	0.0	0.0	0.0	0.0	0.0

*The table reports farmers' own estimated rates of recovery of living skills such as washing, shaving, dressing, tieing shoes, manipulating buttons, etc.
†Average reflects subsequent complications years after injury which reversed early recovery in one case.
Source: Survey data.

TABLE 16.—Previous Work Skills: Rate at Which Farm People Recovered Previous Work Skills After Receiving a Permanent Injury from a Farm Accident, Ohio Study, 1971-72.*

Type of Injury	No. Responding	Percent of Previous Work Skills Recovered Within: First 3 months	4-6 months	7 months to 1 year	1-3 years	Still Continuing	Total of Possible 100%
Amputations							
Fingers	13	53.4	21.2	13.8	6.2	0.0	94.6
Partial hand	5	43.7	22.4	13.8	12.5	1.3	93.7
Hand at wrist	7	55.7	23.6	15.0	1.4	0.0	95.7
Hand above wrist	10	24.4	28.7	24.0	12.3	0.0	89.4
BTE-Bilateral	3	10.0	43.4	5.0	15.0	3.3	76.7
BTK-ATK	9	8.6	16.4	27.1	30.1	1.4	83.6
ATE	6	20.8	41.8	15.0	5.8	8.3	91.7
Skeletal damage	3	30.0	0.0	50.0	3.3	—25.0†	58.3
Vision—one eye	3	41.7	16.7	8.3	0.0	0.0	66.7‡
Other	1	100.0	0.0	0.0	0.0	0.0	100.0

*The table reports farmers' own estimated rates of recovery of customary work skills required of farm work such as handling tools and machinery, caring for livestock. Note that work skills are shown to recover more slowly than living skills reported in Table 15. This seems reasonable inasmuch as most living skills are simple tasks repeated daily. But it is also important, as regards recovery of work skills, to recall that many farmers were injured in the autumn and their early recovery months occurred in winter when few opportunities for recovering work skills were available.

†Average reflects subsequent complications which reversed early recovery in one case.

‡Includes other complicating factors in one case.

Source: Survey data.

TABLE 17.—Attitudinal Rehabilitation of Farm People Who Received Permanent Injuries in Farm Accidents, Ohio Study, 1971-72.*

Type of Injury	No. Responding	Percent of Attitudinal Rehabilitation Within: First 3 months	4-6 months	7 months to 1 year	1-3 years	Still Continuing	Total of Possible 100%
Amputations							
Fingers	13	85.5	9.5	3.2	1.8	0.0	100.0
Partial Hand	5	83.7	3.8	3.8	3.7	0.0	95.0
Hand at Wrist	7	93.5	3.6	2.9	0.0	0.0	100.0
Hand Above Wrist	10	58.9	21.1	9.4	5.6	0.0	95.0
BTE Bilateral	3	43.3	20.0	20.0	10.0	0.0	93.3
ATE	6	41.7	13.3	21.7	20.0	3.3	100.0
BTK-ATK	9	53.2	25.6	9.4	8.1	0.0	96.3
Skeletal Damage	3	80.0	8.3	0.0	8.3	—13.3†	83.3
Vision—one eye	3	40.0	6.7	6.7	13.3	13.3	80.0‡
Other	1	—	—	—	—	—	—

*Farmers reported that personal attitudes were an important factor affecting their recovery (see Table 14). This table inquires about the rate of attitudinal recovery.

†Average reflects subsequent complications which reversed early recovery in one case.

‡Includes other complicating factors in one case.

Source: Survey data.

Recovery of Daily Living Skills

About 95 percent of the study participants judged that they had recovered 90 percent or more of their normal daily living skills, i.e., ability to care for themselves without the help of others. Those who were more seriously disabled did not necessarily recover less of their living skills, but seemed to recover more slowly. Except for very disabling injuries, most of the recovery of daily living skills occurred in the first 3 months after the injury. In all cases, most of the recovery occurred in the first 6 months after the injury (Table 15).

The recovery of daily living skills is one of the first steps in rehabilitation. The ability to care for one's self without assistance from others is important. As one learns to perform these tasks, the experience builds independence and self-confidence, and generates the courage to attempt other tasks, such as work. The rapid recovery of domestic skills provides some indication that further recovery can be expected.

Recovery of Previous Work Skills

The recovery of previous work skills displayed a similar pattern, although recovery was neither as complete or as rapid. About 53 percent of the respondents thought they had recovered 90 percent or more of their previous work skills. Ninety percent believed they had recovered more than 75 percent of their previous work skills. The recovery of work skills spanned a longer period of time, and less of the skills were recovered in the first 3 months after the injury (Table 16).

Work skills are, of course, more demanding than living skills. They are characterized by greater variety and complexity; typically are outdoor tasks undertaken in all kinds of weather; frequently require bending, stooping, or other demanding postures; and often require much physical effort—pulling, twisting, lifting, etc.

But it is important to point out a factor contributing to the apparently slower rate of recovery than recorded for living skills. Many of these people were injured in the autumn and their early months of convalescence therefore occurred in winter. Given the seasonal nature of much farm work, there were not many farm tasks demanding attention during the early convalescent months for many of these people. There was little opportunity for one to begin the task of recovering previous work skills. Several respondents noted this during their interview and thought it important enough to point out. This fact could contribute to the lower averages on recovery rates recorded in Table 16.

Generally speaking, the rate of recovery of work skills was related to the severity of the injury. Below-the-elbow amputees recovered more quickly than above-the-elbow amputees. Upper limb amputees recovered more quickly than lower limb amputees. Bilateral amputees recovered at about the same rate as lower limb amputees.

Attitudinal Rehabilitation

Participants were asked about the importance to the recovery process of their personal attitudes and self-confidence (Table 14). Attitudes were understood to mean motivation to cope with situations encountered, and confidence to mean convictions about one's ability to do so.

Most respondents confirmed that such considerations were important aspects of successful recovery (Table 14). This psychological dimension of rehabilitation was probed further with inquiries about the rate of attitudinal recovery following a disabling injury. Participants were asked to consider the impact their injury had had on their personal attitudes (motivation to cope) and the extent to which some personally perceived attitudinal position had recovered to a former (normal) condition (Table 17).

The question did not ask for definitions or evaluations or even confessions of what some former attitudinal position was like. It asked only that, whatever it was, to what extent it had been re-acquired and at what rate this re-acquisition occurred. Hence, nothing is really known about the substance of the attitudinal recovery process. But it was learned that the extent of attitudinal damage shows a direct relationship to the severity of the injury, and that severity of the injury, either physiological or psychological, is related to the rate of recovery, with the more severe injuries being generally associated with a longer period of recovery (Table 17).

Decisions About Alternative Futures

Most farmers did not consider alternative futures other than farming. Either their injuries were not sufficiently impairing to deter them, or their commitment to farming was great enough, or their employability in non-farm pursuits was so low that few of them spent much time contemplating alternative futures (Table 18). It is doubtful that the latter is the case. Too many modern-day farmers are, as a matter of course, part-time farmers whose principal source of income is non-farm employment.

Typical non-farm employment alternatives for farm people are recorded in footnotes to Table 18. The last section of Table 18 confirms that the status of the great majority of injured farm people was unchanged from before their injury and that this unchanged status was a matter of choice rather than of necessity.

Value Orientation

Respondents were questioned about their goals and aspirations. It had been hypothesized that injuries would deter farmers from establishing goals, and that they would choose new goals having greater probabilities of realization. As Table 18 shows, most farmers did not consider many alternatives. Hence, Table 19 does not record goal changes which can be associated closely with injuries or impairment.

Responses recorded in Table 19 disclose a relationship between goals and the ages of interviewees. The youngest people, under 25, enjoying an age of least commitment to anything specific, an age least trapped by past decisions already made, showed more willingness to consider non-farm goals and service-oriented goals. The group also showed some tendency to entertain more goal possibilities in total (Table 19) than any other group.

Farmers aged 25 to 39 focused farm-oriented goals rather heavily on material gain, relinquishing non-farm aspirations they may once have held. After their injuries they were even more committed to farming than before, and displayed a shift in focal point of farm goals toward more financial security.

Farmers in the 40 to 54 age group seemed to have encountered a realization that total commitment to material gain on the farm was not progressing satisfactorily and that their families were maturing and moving away. Goals shifted away from material gain and toward the exploration of non-farm goals once dismissed and toward family considerations.

TABLE 18.—Decisions About Alternative Futures Reported by Farm People with Permanent Injuries from Farm Accidents, Ohio Study, 1971-72.

Injury Effect and Employment Alternatives	Type of Injury: Amputations: Fingers	Amputations: Partial and Total Hands and Wrists	Amputations: Bilateral Below Elbow	Amputations: Above the Elbow	Amputations: All Lower Limb	All Other Injuries	Total
What vocational alternatives were made known to you after your injury?							
None	12	13	2	5	5	5	42
One*	1	2	0	1	2	0	6
Two†	0	3	0	0	1	1	5
More than two‡	0	1	1	0	1	0	3
No answer	0	3	0	0	0	1	4
Total	13	22	3	6	9	7	60
What vocational alternatives did you consider besides those you have chosen?							
None	12	11	3	2	4	4	36
One other**	1	7	0	1	4	1	14
Two others††	0	1	0	1	0	1	3
More than two‡‡	0	1	0	0	0	0	1
No answer	0	2	0	2	1	1	6
Total	13	22	3	6	9	7	60
Your present vocational status is							
Unchanged from before injury?	10	11	2	3	5	5	36
Necessitated by injury?	0	3	0	1	0	2	6†††
Chosen by you***	3(8)	8(17)	1(3)	2(4)	4(5)	0(4)	18(41)
Total	13	22	3	6	9	7	60

*Included insurance, heavy equipment operation, **factory work, welding and college.** (Bold face type indicates alternatives which were **adopted.)**

†Included feed sales, machinery sales, milk testing, welfare work, mechanic training, township employee, college, **insurance** and **auctioneering.**

‡Included livestock sales, livestock buying, truck driving, **nursing, local politics.**

Included factory work, welfare work, mechanic training, physical therapy, carpentry, mail carrier, auctioneering, livestock buying, park employee, state highway dept., **local politics, tax counseling, and **farm organization field work.**

††Included road maintenance, farm machinery sales, county agent, college.

‡‡College, farming, data processing.

***Numbers in parentheses indicate actual number of responses which greatly exceeds the total number of respondents (60). The reason is that the question was worded in the interview schedule in a way that permitted more than one answer. The significance of this is that a number of respondents used this opportunity to confirm the fact that their unchanged status was a consequence of choice and not of necessity.

†††Three of these respondents regarded their injury-induced change as advantageous; i.e., a favorable or fortunate situation they might have missed had the injury not occurred.

Source: Survey data.

Farm people over 55 seemed to take a resigned attitude, to accept conditions as they found them, as they once had been obliged to accept the fact of a permanently impairing injury. These older farmers were not preoccupied with material gain, and they did not aspire to unrealistic non-farm possibilities. Their goals emphasized enjoying life as they found it, passing their world on to their children, and relaxing from the business of goal commitment which had preoccupied them when they were younger.

Goal Attainment

Table 20 pursues the inquiry about shifts in goals recorded in Table 19. If there is a lesson to be learned from Table 20 it is that men set goals they think they can reach. Goals seem to be so essential that they will be devalued or abandoned when prospects for their realization are blighted. Moreover, the only continuity which needs to prevail between old goals and new goals is that the new goals have bright prospects for attainment, like the old goals once had. Hence, new goals need not to be a mere amendment or scaling-down of an earlier commitment. They can reflect a complete re-orientation in the search for an attainable goal—any attainable goal, one is tempted to say.

Some new goals appear to be supplementary to older goals, however. With few exceptions, the expectations for attaining new goals were shown to be higher than expectations for attaining old goals. Moreover, as age approaches there is an apparent tendency to accept less than 100 percent attainment as an inescapable fact, even on some new goals focused on material gain. But at this point the em-

TABLE 19.—Percentage Distribution of Responses to Inquiries About Old Goals Already Established at Time of Injury, and New Goals Established After Injury Occurred, by Age Groups, Ohio Study, 1971-72.

Goal Orientation	6 People Under 25		12 People 25-39		21 People 40-54		21 People 55 & Over	
	Old Goals	New Goals	Old Goals	New Goals	Old Goals	New Goals	Old Goals	New Goals
Farm-Oriented Goals								
Land emphasis*	16.7%	16.7%	38.2%	37.4%	42.4%	24.8%	20.7%	8.7%
Livestock emphasis†	16.7	—	4.8	18.8	6.1	6.3	6.9	4.3
Financial emphasis‡	—	—	9.5	24.9	24.2	15.6	13.8	4.3
Life-style emphasis**	—	16.7	9.5	6.3	—	6.3	27.7	21.8
Non-Farm Goals								
Employee emphasis††	—	16.7	9.5	—	6.1	6.3	—	4.3
Self-employed emphasis‡‡	—	8.3	—	—	—	9.4	—	8.7
Service emphasis***	—	16.7	9.5	—	—	9.4	—	—
Commitment, preparation†††	—	8.3	—	—	—	3.1	—	—
Family-Goals								
The family unit‡‡‡	—	16.7	9.5	6.3	3.0	9.4	3.4	—
Establishing the children****	—	—	—	—	9.1	6.3	10.3	13.0
No Goals, Due to								
Young age when injured	66.6	—	—	—	3.0	—	3.4	—
Personal philosophy††††	—	—	9.5	6.3	6.1	—	13.8	8.7
Age or injury	—	—	—	—	—	3.1	—	26.2
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

*Characterized by goals such as: to get more land, to have 1000 acres, to keep growing, to own a farm someday, to farm 200 acres, etc.

†Same ambitions as above, but focused on livestock rather than land, such as: to milk 100 cows, a quality dairy, a registered beef breeding herd, double the hog operation, etc.

‡Again, the same basic drive, but focused on money, profit, savings, security, efficiency, etc. For example: grow in income, make farm pay, financial security for retirement, be financially independent, be free of debt, have lots of money in the bank. These motives could as well prevail among non-farm goals below, but were given in a farm context.

**Focused on the advantages of farm living, such as work outside, be independent, live on a farm, work on the farm, enjoy farming.

††Generally the preoccupations of wage earners, such as: get a job, have a better job, get a stable job, stay out of trouble, advance at the factory, build a house, own a home.

‡‡Generally business or commercial motivations: insurance, tax consulting, real estate, auctioneering, start a welding or mechanic business, own a bank.

***Generally public service and professional orientation: to be a patrolman, a teacher, a county agent, a registered nurse.

†††Strong motivation or preparation commitments: To get more education, to be the best around, to succeed, "tunnel on through."

‡‡‡To get married, to raise a family, be a better father, happiness, spend more time with the family.

****A farm for each of the boys, to get the children educated, to get son through college, educate the family, establish the children, see son take over, see grandson take over.

††††Typified by the response: "I don't know as I had any (goals). I was sort of just living day to day." Also, no set goals, no real goals, no clear cut goals, never had acreage and income ambitions.

Source: Survey data.

phasis shifts, as has been seen, toward goals emphasizing family and life-style considerations. Table 20 records that these are goals on which the prospects for full attainment remain.

RECOMMENDATIONS OF STUDY PARTICIPANTS

Interviewees were asked for suggestions which they thought would be helpful to others in the matters of accident prevention and successful rehabilitation. Responses to these open-ended questions were then tabulated and distilled through successive table drafts into the summarized forms in Tables 21 and 22.

Accident Prevention

In the judgment of injured farm people, accidents were almost wholly a consequence of some dimension of human error. Very seldom were accidents viewed with fatalism, and only infrequently did the injured look for fault or blame in others (Table 21). Responses were sober and thoughtful.

Sixty people offered 92 specific observations. Almost entirely they attributed their accident experience to failures of their own creation. They agreed that standard safety procedures were desirable, but they were emphatic in their view that this was not enough. Two-thirds of all respondents emphasized the necessity of maintaining a constant, cautious, attentive alertness. Although there was on the average an 11-year time span since these people had been injured, none of them had ever been involved in a second accident producing a permanent injury.

TABLE 20.—Percentage Attainment of Specified Goals Among Farm People Permanently Injured in Farm Accidents, by Age Groups, Ohio Study, 1971-72.

Goal Orientation*	6 People Under 25 Years Old				12 People 25-39 Years Old			
	Old Goals†		New Goals‡		New Goals‡		Old Goals†	
	Reached by Now**	Expect to Reach††	Reached by Now‡‡	Expect to Reach***	Reached by Now**	Expect to Reach††	Reached by Now‡‡	Expect to Reach***
Farm-Oriented Goals								
Land emphasis	10%	100%	10%	100%	75%	100%	43%	98%
Livestock emphasis	D.K.	D.K.	—	—	70	85	78	100
Financial emphasis	—	—	—	—	5	100	0	97
Life-style emphasis	—	—	60	100	100	100	70	100
Non-Farm Goals								
Employee emphasis	—	—	50	100	0	D.K.	70	80
Self-employed emphasis	—	—	D.K.	D.K.	—	—	—	—
Service emphasis	—	—	55	100	—	—	—	—
Commitment, preparation	—	—	20	100	—	—	—	—
Family-Goals								
The family unit	—	—	—	—	54	100	100	100
Establishing the children	—	—	—	—	—	—	—	—
	21 People 40-54 Years Old				21 People 55 Years and Older			
Farm-Oriented Goals								
Land emphasis	72	90	63	89	93	95	88	88
Livestock emphasis	65	80	60	90	93	100	50	50
Financial emphasis	61	96	61	98	80	81	85	92
Life-style emphasis	—	—	75	100	83	85	75	100
Non-Farm Goals								
Employee emphasis	95	100	95	100	—	—	100	100
Self-employed emphasis	95	100	50	100	—	—	100	100
Service emphasis	—	—	100	100	—	—	—	—
Commitment, preparation	—	—	50	100	—	—	—	—
Family-Goals								
The family unit	—	—	80	100	50	50	—	—
Establishing the children	60	95	70	96	100	100	53	93

*For identification and definition of goals, see footnotes to Table 19.
†Goals already established at time injury occurred. For goal definitions, see footnotes to Table 19.
‡New goals which have emerged since injury. For goal definitions, see footnotes to Table 19.
**To what extent (percent) have you presently reached goals you had selected before you were injured?
††To what extent (percent) do you expect to reach goals you had selected before you were injured?
‡‡To what extent (percent) have you presently reached goals you have selected since you were injured?
***To what extent (percent) do you expect to reach goals you have selected since you were injured?
Source: Survey data and Table 19.

TABLE 21.—Accident Prevention: Number of Responses to Inquiries About Farm Accident Prevention, Selected Response Categories, Ohio Study, 1971-72.

Accident Prevention Response*	Accident Source				
	29 Cornpickers	7 Field Choppers	17 Other Machines	7 Non-Machines	Total
Observe the Standard Safety Rules†	16	3	5	1	25
Be Alert, Cautious, Attentive‡	22	5	8	4	39
Avoid Hurry, Monotony, Fatigue**	14	2	2	1	19
Improved Machinery Design††	4	1	0	0	5
Accidents Are Unavoidable‡‡	0	0	2	2	4
Total Responses	56	11	17	8	92
Responses per Accident	1.93	1.57	1.00	1.14	1.53

*Responses to the question: "What do you regard as the most significant factor(s) which would contribute to the prevention of injuries from farm accidents?" Hence, the question was open-ended and response categories shown in the table were constructed after classifying all responses.

†Read safety plates, follow written instructions, use shielding and safety devices, follow customary rules, shut down machinery, etc.

‡Characterized by the responses: "You hear about somebody else and you think 'I'm gonna keep my hands out of the field chopper.' " Be constantly cautious, concentrate, pay attention. Respect the machine. Consider the risk, the danger "Give deep consideration to the value of your life and health."

**Characterized by the response: "Accidents happen when you are tired and not alert, and safety devices won't solve the problem then. Fatigue, lack of rest, drowsy—Stop. Walk around the tractor." It is interesting to note that when accident causes were being considered, only five respondents thought fatigue or carelessness contributed to their injury (Table 9). Yet here in Table 21, admonition about hurrying, monotony, and fatigue are offered as very important considerations.

††Characterized by the response: "Enough power and capacity to do the job. Let the manufacturers do more research on machine limits in the beginning instead of making improvement packages later."

‡‡Characterized by the responses: "Accidents are unavoidable." "Accidents happen anyhow." "Farm accidents have always been with us."

Source: Survey data.

TABLE 22.—Recovery from Injuries: Rehabilitation and Recovery; Number of Responses to Inquiries About Recovery from Farm Accident Injuries, Selected Response Categories, Ohio Study, 1971-72.

Recovery Responses*	Accident Sources				
	29 Cornpickers	7 Field Choppers	17 Other Machines	7 Non-Machines	Total
Maintain a Positive Attitude†	17	4	6	0	27
Stay Occupied; Get on with the Job‡	11	4	3	2	20
Proceed with Confidence; Without Regret**	12	2	8	4	26
People Are Helpful††	7	0	0	0	7
Total Responses	47	10	17	6	80
Responses per Injury	1.62	1.43	1.00	0.87	1.33

*Responses to the question: "What do you regard as the most significant factor(s) which will contribute to the successful rehabilitation of a person handicapped by a farm accident?" Response categories shown in the table were constructed after classifying all responses. The essence of the responses seemed to be that the threats to recovery are far more psychological than physical. They stressed the importance of a positive frame of mind and of work or other commitment to occupy the mind. Without a positive attitude and focal point other than the injury, there could be pointless speculation, self pity, and regret.

†Characterized by the response, "Attitude and ability to face the situation. Other factors may help, but it all boils down to the person."

‡Includes responses like "Get back to work. Keep busy. Stay active. You've got a job; do it. Get back on the job. Involve yourself in your work. Apply yourself to an interest. Exercise."

**Included responses like: "Accept the injury. Overcome resentment. Self pity has no value. Don't feel sorry or doubt yourself. Must depend on yourself. Learn to do again. Be satisfied with yourself. Don't lose confidence or will power. Never give up, don't feel sorry." The category is similar to the first except that the first tends to emphasize positive considerations while the second warns against negativism.

††The category emphasized family, friends, neighbors, and professionals. For example: "Send (to the injured person) someone in the same situation. (I) felt I didn't have a chance until a man without two hands showed me what he could do. (It) was a great inspiration." Also, the response "The rehabilitation people (ORSC) are most helpful (and so is) your physician, your surgeon. These things (injuries) can affect you one way or the other, and these people can affect the way it goes. That doctor made me feel so good that day."

Source: Survey data.

One-third of the respondents cautioned against hurry, monotony, or fatigue. These admonitions seem to be interrelated rather than separate. Hurry, monotony, or fatigue are probably among the most destructive factors which could interfere with alertness, caution, or attentiveness. If there is a need to maintain a constant, cautious, attentive alertness, then there is also a need to avoid hurry, monotony, and fatigue. Footnotes to Table 21 describe response categories, and these offer further insights in the matter of accident prevention.

Recovery from Injuries

Interviewees offered fewer judgments about factors affecting recovery (Table 22) than they did about factors important to accident prevention. But the responses were particularly interesting because of their close conformity to what a literature review had shown to be the principal findings of previous research concerning factors important to successful recovery.

Not one out of 80 responses was directed to physiological considerations. All responses were related in some way to emotional, attitudinal, or psychological considerations. They were emphatic in their views that successful rehabilitation required a candid confrontation of realities, a willingness to the point of determination to get on with the recovery tasks, and the discipline, confidence, and positive attitude the undertaking required. Given those facts, it would also be true that the efforts of other people would be helpful to this process (Table 22).

The responses seemed to indicate, although not one specifically said so, that human minds focus on things, that the injury is the most obvious focal point, and that allowing introspection to develop about the injury is unhelpful and possibly dangerous. Therefore it is very important that other things be forced forward to occupy the center of attention. This rationale is helpful, at any rate, in identifying a cohesive undertone to all the admonishments about a positive attitude, staying occupied, keeping busy, exercising confidence, and abandoning regrets. Footnotes to Table 22 define response categories and these also provide further insights into interviewee convictions about factors conducive to a successful recovery.

SUMMARY

Sixty farm people participated in the study. They were the cooperating and eligible persons who could be located from a total of 91 names which had been suggested. Forty-three of these were household heads at the time of their injury, nine were dependents, eight were single, and all were injured in farm-related accidents.

Ninety percent of all accidents involved machinery. More than half of all machinery accidents involved cornpickers. The typical machinery accident occurred when the individual was trying to unclog a piece of moving machinery during some harvest phase of farming. Ninety percent of all accidents recorded resulted in amputations. There was almost a perfect relationship between machinery accidents and amputations. Non-machine accidents typically were associated with injuries other than amputations.

Study participants averaged 20 years of farming experience. Those injured in machine accidents averaged 7 years of experience with the specific machine on which they were injured.

Participants judged that accidents were caused by a combination of circumstances. The most frequently mentioned contributing cause was conscious risk acceptance, i.e., the acceptance of an obvious and familiar risk such as poking at a piece of moving machinery to correct a problem. Other contributing factors included hurrying to meet deadlines, some of them imaginary; carelessness and fatigue; and mental preoccupation with something else. Planning, worrying, and daydreaming accounted for much of the preoccupation.

Injuries also occurred from non-machine sources. These usually were associated with falls or difficulties with livestock. Their consequences included impaired vision and skeletal damage resulting from calcium deposits, fused joints, etc. Accidents of this sort appeared to be more impairing than those involving amputations, but the number of observations was small.

At the time of their accidents, two-thirds of the injured were engaged in or were members of households engaged in full-time farming. The remaining one-third derived most of their income from non-farm jobs but were also engaged in farming. In about half of the observations, another household member (usually the wife) worked for added income.

Average farm income was less than $6,500 (current dollars) at the time of the accident. The average cost of accidents was measured in terms of medical costs, days lost from work, and annual income loss. All were figured on the basis of costs incurred in the first 6 months and on subsequent costs incurred after that period.

Medical costs for the 26 people most recently injured (1965-1970) averaged $2,350 in the first 6 months and $625 thereafter (current dollars). Sixty people averaged 90 days away from work during the first 6 months. Annual income losses were modest and conjectural. Essentially all medical costs were paid by family insurance, family savings, and state aid, in that order. Essentially all of the farm work burden during days lost from work was borne by

family members, friends and neighbors, and hired hands, in that order.

Study participants judged that the factors most likely to handicap the recovery process were inadequate financial or educational resources, lack of confidence, and poor personal attitudes. But the general tenor of responses was optimistic. Respondents tended to emphasize factors conducive to a successful recovery. In their judgment, the most important single factor was favorable family reactions. Other factors almost equally important were personal attitudes, self-confidence, and an agricultural background.

About 95 percent of the study participants judged that they had recovered 90 percent or more of their previous daily living skills, i.e., ability to care for themselves without the help of others. More serious injuries did not necessarily result in recovering less of their former skills, but they seemed to recover more slowly.

The recovery of previous work skills displayed a similar pattern, although recovery was neither as complete or as rapid. About 53 percent of the study participants judged that they recovered 90 percent or more of their previous work skills. Ninety percent of the respondents felt that they had recovered more than 75 percent of their previous work skills.

Most of these people, having a job skill and a place to apply it, returned to the farm without even contemplating non-farm job alternatives. Forty-two of them (70 percent) reported that nobody even mentioned other vocational alternatives to them, and 36 of them (60 percent) reported that they did not contemplate possible job alternatives. Eighteen (30 percent) reported that they considered but rejected one or more possible alternatives.

These people did report shifting emphasis in personal goals, but the shifting emphasis seemed to be related to age rather than to injury. Persons under 25 years of age entertained more total possible alternative futures (per person) and considered more non-farm possibilities. People in the age bracket 25 to 39 were strongly farm-oriented and concentrated almost exclusively on expanding their farming operation. People aged 40 to 54 reported a slackening in farm interests and that they reconsidered non-farm possibilities, devoted attention to financial security, and expressed an interest in increased family activities. People aged 55 and over emphasized enjoyable life-style goals and family considerations, and conceded that goal commitments were not as important to them as they once had been.

When asked for their recommendations for accident prevention and injury recovery, responses could be classified in identifiable categories. Accident prevention requires more than passive acceptance of standard safety procedures, they reported. This must be augmented by a constant, cautious, attentive alertness. Distractions must be avoided. Identifiable distractions to avoid include hurrying, monotony, and fatigue. A satisfactory injury recovery experience requires a positive mental attitude, staying occupied (either with work or some other absorbing interest), and proceeding about the business of recovery with confidence in one's ability to do so.

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